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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,065	08/23/2001	Larry R. Bersuch	TA-00524	1674

7590

03/07/2003

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EXAMINER

KILKENNY, TODD J

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 03/07/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,065

Applicant(s)

BERSUCH ET AL.

Examiner

Todd J. Kilkenney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2&3. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 6 recites the limitation "the adhesive film" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 1, 2, 4, 6 – 12, 14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wanthal et al ("Interlaminar Reinforced Composites Development for Improved Damage Tolerance") in view of Owens et al ("Tension Pull-off and Shear Test Methods to Characterize 3-D Textile Reinforced Bonded Composite Tee-Joints") and/or Kohler (US 5,476,704).

In the cited published paper supplied in applicant's IDS, Wanthal et al summarize several efforts within the Composite Affordability Initiative (CAI) – Pervasive program to

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evaluate and implement application of 3D textile preforms as means to improve tolerance of composite structures. Wanthal et al further suggest that a number of textile elements were fabricated and tested in CAI, including a pi shaped textile preform. In one tested embodiment, the 3-D textile was resin infused and staged, the flange of the pi shaped staged preform was located on prepreg tape lay-up (recognized as a skin reading on applicant's claimed first component), a tool coated with release agent was inserted in the clevis of the preform during curing to maintain geometric shape. This assembly was bagged and autoclave cured. After curing, a precured laminate (applicant's second component) was paste bonded in the pi clevis using adhesive (page 13, lines 7 – 14).

Owens et al, whose article is cited in the Composite Structures Theory and Practice Text, discloses employing adhesive (film adhesive) in the clevis joint of a 3-D woven pi shaped textile to bond a web component therein (Figure 1).

Kohler teaches a "pi" shaped synthetic resin composite profile, wherein referring to Figure 4, a web panel is inserted into the clevis joint of the composite profile and bonded therein by an adhesive (4).

As evidenced by Owens et al and/or Kohler, one of ordinary skill in the art would readily recognize in bonding a web panel (i.e. applicant's second component) within the clevis joint of a 3-D preform, that the web panel would need to be of a narrower width than the separation distance between the legs of the pi shaped preform so as to permit adequate clearance for adhesive within the clevis joint. Furthermore, in view of Wanthal et al suggesting inserting a tool coated with release agent within the clevis joint during

curing to maintain the geometric shape of the preform, one of ordinary skill would readily appreciate employing a tool that has a width that closely matches the separation distance between the legs of the pi shaped preform so as to be able to "maintain" its shape as taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to ensure that the second component (i.e. the precured laminate) of Wanthal et al had a width smaller than the tool so as to ensure adequate clearance for the adhesive provided in the clevis joint as is needed as diagrammed by either Owens et al and/or Kohler.

As to claims 2 and 12 and applicant's claim limitation of using a film adhesive to adhere at least one surface of the preform to at least one surface of the first component, it is noted that Wanthal et al although suggesting both cocuring and cobonding process fail to positively suggest the use of an adhesive film to help adhere the preform to the web panel. However, as evidenced by Owens et al, it is known that cobonding processes for adhering a 3-D woven pi clip to a skin panel include a film adhesive positioned between at least one surface of the preform and at least one surface of the panel. It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to include a film adhesive in adhering the 3-D textile to the precured prepreg lay-up in the cobonding process as suggested by Wanthal et al as cobonding processes are known to include film adhesive positioned between the preform and web panel components as evidenced by Owens et al.

As to claims 6 and 16, referring to Figure 1 of Owens et al, it is further known to include overwrap plies to the preform and adhesive film. It would have been obvious to

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one of ordinary skill in the art at the time of the invention to include overwrap plies to the cobonding process of Wanthal et al as is known as suggested by Owens et al to improve shear strength.

6. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wanthal et al ("Interlaminar Reinforced Composites Development for Improved Damage Tolerance") in view of Owens et al ("Tension Pull-off and Shear Test Methods to Characterize 3-D Textile Reinforced Bonded Composite Tee-Joints") and/or Kohler (US 5,476,704) as applied to claims 1 and 12 above, and further in view of Seemann (US 5,052,906).

Wanthal et al while teaching to include a coating of release agent on the tool inserted in the clevis joint fail to suggest locating a peel ply within the clevis between the tool and preform. However, the use of a peel ply in vacuum curing procedures for resin infused textiles is known in the art as evidenced for example by Seemann. It therefore, would have been obvious to one of ordinary skill in the art at the time of the invention to include a peel ply in the clevis joint between the tool and preform during the curing operation of Wanthal et al so as to facilitate the removal the tool of Wanthal et al, leaving the side faces of the clevis joint conditioned for the acceptance the adhesive as suggested by Seemann (Col. 6, lines 25 – 43).

7. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wanthal et al ("Interlaminar Reinforced Composites Development for Improved Damage

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Tolerance”) in view of Owens et al (“Tension Pull-off and Shear Test Methods to Characterize 3-D Textile Reinforced Bonded Composite Tee-Joints”) and/or Kohler (US 5,476,704) as applied to claims 1 and 12 above, and further in view of Jonas (US 4,671,470).

Wanthal et al appear not to positively suggest placing over-presses against the outer surfaces of the preform while curing the pi shaped preform. However, as evidenced by Jonas, it is known to employ a multi-segment forming tool in curing operations of preforms having spaced legs (see Fig. 8, element 58), wherein the multi-segment forming tool appears to comprise over-presses against outer surfaces of the preform. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a multi-segment forming tool such as that taught by Jonas in the curing process of Wanthal et al as means to further help and shape the preform and to help maintain the compaction of filaments within the legs of the woven textile (see Jonas; Col. 6, line 56 – Col. 7, line 19).

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wanthal et al (“Interlaminar Reinforced Composites Development for Improved Damage Tolerance”) in view of Owens et al (“Tension Pull-off and Shear Test Methods to Characterize 3-D Textile Reinforced Bonded Composite Tee-Joints”) and/or Kohler (US 5,476,704), Seemann (US 5,052,906) and Jonas (US 4,671,470).

As addressed in the rejections above, Wanthal et al summarize several efforts within the Composite Affordability Initiative (CAI) – Pervasive program to evaluate and

implement application of 3D textile preforms as means to improve tolerance of composite structures. Wanthal et al further suggest that a number of textile elements were fabricated and tested in CAI, including a pi shaped textile preform. In one tested embodiment, the 3-D textile was resin infused and staged, the flange of the pi shaped staged preform was located on prepreg tape lay-up (recognized as a skin reading on applicant's claimed first component), a tool coated with release agent was inserted in the clevis of the preform during curing to maintain geometric shape. This assembly was bagged and autoclave cured. After curing, a precured laminate (applicant's second component) was paste bonded in the pi clevis using adhesive (page 13, lines 7 – 14).

Owens et al, whose article is cited in the Composite Structures Theory and Practice Text, discloses employing adhesive (film adhesive) in the clevis joint of a 3-D woven pi shaped textile to bond a web component therein (Figure 1).

Kohler teaches a "pi" shaped synthetic resin composite profile, wherein referring to Figure 4, a web panel is inserted into the clevis joint of the composite profile and bonded therein by an adhesive (4).

As evidenced by Owens et al and/or Kohler, one of ordinary skill in the art would readily recognize in bonding a web panel (i.e. applicant's second component) within the clevis joint of a 3-D preform, that the web panel would need to be of a narrower width than the separation distance between the legs of the pi shaped preform so as to permit adequate clearance for adhesive within the clevis joint. Furthermore, in view of Wanthal et al suggesting inserting a tool coated with release agent within the clevis joint during curing to maintain the geometric shape of the preform, one of ordinary skill would

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readily appreciate employing a tool that has a width that closely matches the separation distance between the legs of the pi shaped preform so as to be able to "maintain" its shape as taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to ensure that the second component (i.e. the precured laminate) of Wanthal et al had a width smaller than the tool so as to ensure adequate clearance for the adhesive provided in the clevis joint as is needed as diagrammed b either Kohler and or Owens et al.

As to applicant's claim limitation of using a film adhesive to adhere at least one surface of the preform to at least one surface of the first component, it is noted that Wanthal et al although suggesting both cocuring and cobonding process fail to positively suggest the use of an adhesive film to help adhere the preform to the web panel. However, as evidenced by Owens et al, it is known that cobonding processes for adhering a 3-D woven pi clip to a skin panel include a film adhesive positioned between at least one surface of the preform and at least one surface of the panel. It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to include a film adhesive in adhering the 3-D textile to the precured prepreg lay-up in the cobonding process as suggested by Wanthal et al as cobonding processes include film are known to include film adhesive positioned between the preform and web panel components as evidenced by Owens et al.

As to applicant's claim limitation of inserting a peel ply between the legs and inserting a tool within the peel ply, Wanthal et al while teaching to include a coating of release agent on the tool inserted in the clevis joint fail to suggest locating a peel ply

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within the clevis between the tool and preform. However, the use of a peel ply in vacuum curing procedures for resin infused textiles is known in the art as evidenced for example by Seemann. It therefore, would have been obvious to one of ordinary skill in the art at the time of the invention to include a peel ply in the clevis joint between the tool and preform during the curing operation of Wanthal et al so as to facilitate the removal the tool of Wanthal et al, leaving the side faces of the clevis joint conditioned for the acceptance the adhesive as is suggested by Seemann (Col. 6, lines 25 – 43).

As to applicant's claim limitation placing over-presses against outer surfaces of the preform while curing, Wanthal et al appear not to positively suggest placing over-presses against the outer surfaces of the preform while curing the pi shaped preform. However, as evidenced by Jonas, it is known to employ a multi-segment forming tool in curing operations of preforms having spaced legs (see Fig. 8, element 58), wherein the multi-segment forming tool appears to comprise over-presses against outer surfaces of the preform. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a multi-segment forming tool such as that taught by Jonas in the curing process of Wanthal et al as means to further help and shape the preform and to help maintain the compaction of filaments within the legs of the woven textile (see Jonas; Col. 6, line 56 – Col. 7, line 19).

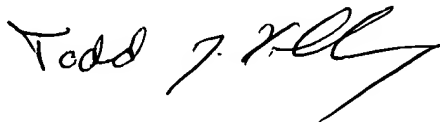
Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,374,570 to McKague, Jr. is cited as pertinent art in that it teaches a "pi" shaped preform used as support member.

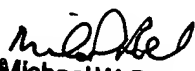
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is **(703) 305-6386**. The examiner can normally be reached on Mon - Fri (9 - 5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



TJK
March 3, 2003



Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700